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REVIEW OF THE

TELEGRAPH AND TELEPHONE

A JOURNAL OF ELECTRICAL, SCIENTIFIC AND MECHANICAL NEWS.

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Too Honest to Succeed.

"Sir, I have here a little thing,
Quite touching in its way,
That tells of rippling waters
And the smell of new-mown hay;
The bashful maiden's witching smile,
The lowing of the kine,
The meadows spangled o'er with flowers,
The sunset most divine,
Are also pictured by the use
Of softly-sounding words,
And over all there comes the sweet,
Low twittering of the birds."

'Twas then up-spoke the editor;
"Your scheme is good," he said:
"On the rippling water racket
You are really quite ahead,
But the spangled meadow business
And the blushing country maid
Have long since been copyrighted,
And therefore I'm afraid
That your story will not answer;
But if you could only make
The maiden sweep the parlor
It will simply take the cake."

* * * * *

The poet man was much downcast,
The lustre left his eye;
He rose to go and sadly said:
"I cannot tell a lie."

The National Telephone Exchange Association.

The fourth meeting of the National Telephone Exchange Association was held as heretofore announced in these columns, at the Vendome Hotel, Boston, the proceedings commencing on time, sharp at 11 A. M., Tuesday, September 5th.

No one present would care to dispute the assertion that the fourth meeting was in every respect, the most brilliant, the raciest, the most enjoyable, and taken for all in all, the most successful meeting of the Association.

The association was called to order at 11 A. M. by the President, Mr. Geo. L. Phillips, of Boston, and, after calling the roll of members, several new names were presented for admission to the association, and were under a suspension of the rules voted in by acclamation.

The report of the Secretary which also comprised that of the Treasurer, was then read, and showed receipts amounting to $1,422.23, and expenditure of $813.41, thus leaving a balance of $608.82.

The Executive Committee, consisting of Messrs. Phillips, Metzger, and Hall, also reported, and the reports as a whole were accepted.

The election of officers being next proceeded with; Mr. Phillips, the President of the association, announced that none of the old officers stood for re-election, for inasmuch as the temperance party appeared to be in power, they did not care to face defeat.

Mr. Tyler, of Connecticut, then after a few well-chosen remarks, nominated the Hon. Marshall Jewell as President for the ensuing year. This nomination being seconded by Mr. Henry Metzger, of Pittsburgh, was received with great applause, and Mr. Jewell was unanimously elected.

After taking the chair to which he was escorted by Mr. Sabin, of San Francisco, he addressed the Association in the following remarks:

"*Gentlemen of the National Telephone Association:* Very much obliged I am, for the honor of this election; very much gratified am I, at the favor with which my name seemed to be received.

"As efficiently as I know Mr. Phillips has filled the executive chair of this association, I cannot help thinking that nothing has been so handsome as the way in which he has left it." Continuing his remarks, he spoke of the telephone, its inception, its surprising career, and its magical development, and commenting upon the class of men, who were engaged in its management and operation, he concluded by saying, "That seeing before him so many vigorous, enterprising, young American citizens, he could not help thinking what a wonderful National Republican Committee they would make, and that with such a following he knew he could win, no matter which side he was on."

Upon the nomination of Mr. Cherry, of Cincinnati, seconded by Mr. Clark, of Louisville, Mr. J. B. Speed, of Louisville, was unanimously elected to the office of Vice-President.

Mr. C. N. Fay, of Chicago, was upon the nomination of Mr. Storke, seconded by Mr. Dwight, elected as Secretary; and Mr. Beach, also of Chicago, was elected as Treasurer.

George C. Maynard was then elected as member of the Advisory Committee for three years.

The Executive Committee, consisting of Messrs. Hall, Metzger, Fay, Wiley and ex-President Phillips *ex-officio* retiring, were succeeded by the following gentlemen: G. L. Phillips, Boston; Frederick O. Vaille, Colorado; Wm. H. Eckert, New York; and Robert Morton, Philadelphia; and the Hon. Marshall Jewell, President.

A letter was read from the American Bell Telephone Company, of Boston, inviting the association to a sail down the harbor, and to a dinner at Nantasket Beach, to take place on Thursday, the 7th instant.

The invitation was accepted with the thanks of the association, and a committee of arrangements consisting of Messrs. Cherry, Jackson and Duxbury appointed by the Chairman, to take all matters pertaining to the invitation, in hand.

The association here, upon the motion of Mr. Cherry, tendered to the retiring President, a vote of thanks and an honorary membership; a vote of thanks being also extended to the retiring Secretary, and later to the retiring Vice-President.

The Committee on Legislation, consisting of Messrs. Speed, of Louisville; Tyler, of New Haven; and Uline, of Albany, when called upon for report, responded to the same, in the person of Mr. Tyler.

This report, commenting upon the fact that the law chiefly took cognizance of things as they have been, or of things as they are, rather than of things to be, referred to the business of telephoning as being in the latter class, or as being in such an early period of its life, that there has been no very pronounced legislation regarding it. An epitome of the several State laws on the subject were presented and discussed, and the deduction drawn, that a legislative attack upon the telephone system, if there is to be one, is still in the future; and also, that if the exchanges were conducted wisely, such a danger was passed.

The matter of taxation of telephone companies was touched upon, and the extreme differences in the different States noted. It was furthermore suggested that telephone companies should endeavor to get the question of taxation definitely settled, inasmuch as in view of the increasing size of the exchange territories, it would be greatly preferable to be taxed by a general authority such as a State, than by a host of local authorities, as the towns in which lines were located.

Reference was made to the increasing encroachments of municipalities upon the facilities of telephonic organizations, and also to the Chicago ordinance requiring all wires to be placed under ground, and it was thought that that ordinance would be held void, on the ground of physical impossibility.

A synopsis was then given of the different suits in which telephone companies have been engaged, and of their several results, and the report was concluded by the summing up of the different issues.

This report, which was a most comprehensive and lucid exposition of the subject, was listened to with great attention, and, after some discussion, upon motion of Mr. Storke, was received with a vote of thanks.

The report of the Committee upon Central Office Systems, &c., Messrs. Fay, Lytle and Reyburn, being called for, was read by Mr. Fay.

It stated that reports had been received from 81 exchanges representing some 29,000 subscribers; and that some exchanges were divided up into more than one office, although the great majority work but one

central office; Chicago at present operating the greatest number of exchanges. Thirty-four of the exchanges reported as using cord switchboards, and twenty one as using plug boards. A comparison of their relative merits was instituted, and the cord switch-board appeared to be in higher favor than it was last year.

In the number of subscribers, New York stood the highest with a total of 2,873; this however including the Metropolitan District. Chicago reported 2,596; Cincinnati 2,056; Buffalo 1,047. In all reporting exchanges, a gradual increase is manifest. It was the opinion of the committee that the steady growth of the business would continue.

Cincinnati headed the list of daily connections with the total of 20,160—Chicago following with 16,044; New York reports 13,935; Providence, 9,086; Detroit, 6,894; Boston, 3,635; Buffalo, 3,800; Rochester, 2,044, and San Francisco, 1,345.

It appeared that the general average number of communications of each subscriber a day was four hundred and eighty-nine hundredths.

Many other interesting statistics, as the number of operators at work at a specific time in the day; the number of connections made per day per operator; the average cost per communication; the compensation of operators; the number of messages per day on lines between cities; the time taken to make 10 consecutive inter-connections on the same wire; and the time taken to make connections through two offices, were recited.

The report as a whole, though Mr. Fay stated it was not complete, was a masterly compilation, and appeared to be generally approved.

Mr. Sargent moved a vote of thanks to Mr. Fay, but upon Mr. Fay mentioning that he had not completely tabulated his statistics, and that consequently his report was unfinished, Mr. Sargent amended his motion and proposed that a vote of thanks be presented to Mr. Fay for his report as far as it went.

The committee on Line Construction and Maintenance, which was comprised of Messrs. C. W. Ross, Columbus; L. B. Firman, Chicago; and J. C. Reilly, now of Brooklyn, having no representative present, no report was made, but the subject was generally discussed.

Mr. Jackson, of Michigan, was called upon to give some account of his admirable system of long lines; and responded with a lucid description thereof, ascribing much of his success to careful and solid construction. He said that in the case of long parallel lines, he kept them as far as possible apart, and where there were many bells on a line he used the Jones shunt. In one case he had two lines running in parallelism for 68 miles.

He preferred heavy wire for long lines. Mr. Babcock gave some account of his singular experience in operating a series of long lines without insulators. Said he had quite a number of lines so constructed varying in length from 4 to 40 miles, and had no trouble in ringing over them; and furthermore that his experience warranted him in asserting that such lines were less troubled by interference with one another, and were much quieter. Considerable surprise and amusement was excited among his fellow members by the statements of Mr. Babcock.

The question of the propriety of soldering joints being propounded by a member, was discussed at length, the affirmative being taken by Mr. Lockwood of the American Bell Telephone Co. and Mr. Fay of Chicago. On motion of Mr. Sabine, a vote was taken as to the opinion of the association regarding this matter, on which it appeared that its opinion was unanimous in favor of soldered joints, and that whether soldering was done or not in practice, every one agreed that it would be a good thing if it was.

The first session of the convention adjourned for the day at 2:50 P. M., to meet at 11 A. M. on Wednesday the 6th instant.

THE SECOND SESSION

Was called to order by the President at 11:22 A. M. Wednesday, and an invitation from Eugene Phillips, of Providence, was read by the Secretary, inviting the members of the association to a clambake at Providence on Friday, Sept. 8th. On motion of Mr. Pope the invitation was accepted, with the thanks of the association.

On motion of Mr. Phillips, a committee was appointed by the President to consider time and place for holding the next meeting of the association, and the propriety of changing the regular time.

Mr. Choate, of Washington, offered a resolution, which, after recapitulating the wonderful progress of, and discoveries in, electrical science during the last few years, provided for the appointment of a general committee of fifteen, to consider the advisability of holding a National Electrical Convention and Exhibition at Washington in January and February, 1884.

After some discussion and proposed amendments, the resolution was temporarily suspended.

The committee on Cables and Subterranean Systems being called upon for a report, Mr. Lockwood of Boston, the only remaining member of the original committee, responded by reading a couple of papers upon the above subjects.

In the paper upon Subterranean Systems, he showed that the conception of underground wires as a means of electrical communication, was by no means new, having been used as early as 1816.

That the fact that underground conductors could be used for telegraphy, was by no means a conclusive proof that they might also be used in telephoning. The difficulties which stood in the way of subterranean telephony were touched upon, and appeared to be first, expense, mechanical difficulties, and electrical difficulties.

Comparisons were instituted between the different proposed systems of subterranean wires, with comments upon each.

The paper devoted to cables, traced the history of the aerial cable from its infancy, described each form in common use, with the different methods of suspension, and advocated the extended introduction of the cable system, especially as a means of introducing lines into the different central offices.

Mr. Lockwood intermingled various extemporaneous remarks with the different paragraphs of his reports, and the whole was well received.

It was voted that the report of Mr. Lockwood be accepted and printed in the minutes of the association, and, upon motion of Mr. Chinnock, the association tendered the gentleman the usual vote of thanks.

The committee on Call-bells, Mr. F. O. Vaille, Chairman, made no report.

In a few well-chosen remarks, Mr. Vaille stated that such was the transition state of all telephonic apparatus that it was almost impossible at present to make a report that would be of any value. He was glad, however, that he could say that a general tone of improvement in the quality of bells put out was very manifest, which, he had no doubt, would be continued.

The committee on Supplies, Mr. Jackson, of Detroit, Chairman, reported as follows: In line supplies there were three materials which enjoyed a more or less extensive use—iron, steel, and phosphor-bronze; regarding iron and steel, the most popular brands were, in iron, No. 12 *B, B,* and *E, B, B,* and No. 14 steel; in the largest cities, No. 12 had given the best satisfaction, but in the smaller cities the No. 14 steel wire appeared to present some advantages.

The committee thought small grades undesirable for long lines, on the ground of its high resistance.

Experimental lines built of phosphor-bronze had not been entirely successful on account of the high resistance and brittleness of the material.

In batteries, the Leclanche porous cup batttery was still the most popular, but has its imperfections; the prism form obviated some of these, but also had its own faults. The Law battery has some points which seem to warrant its more extended adoption; as also the Diamond carbon, a form very similar to the Law. All, however, possess the fault of inconsistency, and a battery which should have the combined virtues of strength, cleanliness and constancy, was a desideratum.

The committee had ascertained that defective flexible cords were a prolific source of trouble; that, although in this matter there had been much change, there had been little improvement; they recommended a cord which will not ravel at the ends and with a better fastened tip.

In the matter of insulators there was little to report. In some cases it was well to soak the insulator pins in paraffine.

The committee appointed to fix the location and date of the next meeting, here reported proposing the city of Cincinnati as the place, and the first Tuesday after the first Monday in November as the time; but after some discusssion and a two-thirds vote of the members present, it was finally decided that the time of holding the convention hereafter, shall be on the third Tuesday in October, and the constitution was accordingly modified so to read.

Mr. Sargent reported for the Committee on Electrical Disturbances, which was composed of Messrs. Sargent, Chinnock and Haskins.

The report stated that these disturbances might be divided into three classes, viz.: leakage, induction, and atmospheric currents. We were learning daily the value of insulation. We have also found out practically that increasing the number of wires improves the results.

The great enemies to long lines, were induction and retardation. That we were not however deterred from making progress was evidenced by the number of long lines varying in length from 4 to 60 miles which have been built during the past year. The capacity of metallic circuits to prevent interference between lines was canvassed, and proper exceptions taken. The Kerite cable, and the Brooks cable, between Newark and Jersey City were noticed and their merits discussed, as was also the induction destroying appliance of Messrs Eckert and Seeley. It was thought that the numerous and increasing applications of electricity, made atmospheric annoyances more troublesome. Lightning arresters were evidently not as necessary as they were thought to be by most exchange managers. Non-magnetic conductors were recommended.

The speaker concluded by noticing the remarks of Mr. Babcock regarding his method of construction which involved dispensing with insulators. After a few comments on the report by Mr. Lockwood—

On motion of Mr. Maynard, of Washington, the report of Mr. Sargent was ordered to be accepted, and printed with the proceedings of the meeting.

Phosphor-bronze wire was at some length discussed, and Mr. Gifford, of Louisville, gave some valuable information regarding it. He said that No. 20 was too small, although he had a line 5 miles long built of it which worked well. The fact that phosphor-bronze did not stretch or rust was also to its advantage. No. 16 would work over fifty miles as well as any other, No. 20 would cost about the same as No. 14 steel. No. 19 costs about $12 per mile. No. 18 about fifteen dollars per mile.

The committee on exchange rates had no completed report, but their report as far as prepared was handed to the Secretary.

In view of the manifest infringement of some of the committees on the province of others, on motion of Mr. Fay the standing committees were reduced by consolidation from eight to five, as follows: Legislation; Central Office Systems; Construction and Sup-

plies; Cable Systems and Electrical Disturbances, and Exchange Rates.

Two of the committees were also enlarged to five members instead of three, after which the association finally adjourned.

The remainder of Wednesday was devoted to social re-union and relaxation, and it was the opinion of every one, that the present was a most interesting and profitable meeting of the association, and promised to be rich in practical results.

Telephone Association Meeting.

PROCEEDINGS OF THURSDAY, SEPTEMBER 7TH.

The proceedings of the Association taking place upon the third day of the meeting were, no doubt, among the most delightful of the entire meeting, appealing, as they did, to the seven senses of every telephone man that could be reached. As recorded elsewhere, the American Bell Telephone, with its usual public spiritedness and hospitality, extended an invitation to the Association to participate in a harbor excursion and dinner at Nantasket Beach.

Promptly at ten o'clock, Thursday morning, the guests of the company, consisting of delegates to the Association, manufacturers and their representatives, and the company's own employees, met at Rowe's Wharf, and embarked in the steamer Nantasket for that most enjoyable experience that Boston can afford — a harbor excursion.

One of the best of Boston's bands accompanied the steamer, and discoursed sweet music in alternately sentimental and martial strains.

Large and merry was the party, and all bent on having a good time.

The first stop was made at Deer Island, where the Industrial School and Reformatory was inspected. After passing through the various wards of the institution, a halt was made in the chapel, where a musical exhibition was given by a large number of the boys, assisted by a few of the girls belonging to the institution. The singing of the boys was very good, and that of the young soloist, in particular, who about a year ago was picked up from the streets of Boston, was most admirable.

After leaving the island, a collation was partaken of on board the steamer, which then directed her course north and east, and along the coast as far as Marblehead. The coast scenery, in all its rugged loveliness, was a novel experience for most of the delegates, and was highly appreciated.

After reaching Marblehead, the boat turned southward, and, re-entering the harbor, brought up about four o'clock in the afternoon at the wharf of the Hotel Nantasket.

Here was found the event of the day—a dinner worthy of the hotel at which it was given.

Two long tables, with an end table to each, were filled with guests, who did most ample justice to the viands provided. The *menu* was itself a rare work of art, and was accorded its due meed of admiration and praise; and, in allusion to the profundity of forms employed by the A. B. T. Co., was entitled Form 109 "See." Form 109 See will, both on account of the interest of the occasion and its own beauty, be always treasured as a valuable souvenir. Everything pertaining to the dinner was a sublime success, from the turtle soup to the coffee, and great credit is due to those immediately interested in the management of the affair.

As the dinner progressed, Col. William H. Forbes, in a few terse and happy remarks, introduced the new President of the Association, ex-Governor Marshall Jewell, whose health was drunk standing.

President Jewell, after returning thanks in his usual happy manner, toasted in succession the President and General Manager of the American Bell Telephone Company, Messrs. Forbes and Vail.

Mr. Nightingale, of Utica, favored the company with a song.

Mr. Forbes then moved an adjournment to the steamer, remarking that it was necessary that some of the guests should reach Boston at an early hour.

Acting upon this suggestion, a return was made to the boat, and during the sail to the city several more names were toasted and several speeches made, and at about half-past seven the steamer reached the wharf, and the guests separated, each satisfied and pleased with the day and its proceedings, and every one fully persuaded that the American Bell Telephone Company is by no means a bad kind of an institution to be connected with.

Annual Clam Dinner of the Telephone, Telegraph and Electric Light Men.

Eugene F. Phillips, in accordance with his now well established custom, gave his Annual Clam Dinner to the above fraternity at Providence, R. I., Friday, Sept. 8, 1882.

The invitations were in the form of a clam-shell of an ocean blue tint, and in addition to the stern realities of the invitation, bore on one face the classic couplet:

"No gritty, grizzly, sand-starved shams,
But genuine Narragansett blue-shelled clams."

In addition to the special invitations, a general invitation was given to the Telephone Exchange Association.

This, of course, assured to Mr. Phillips a much larger number of guests than usual, but it is unnecessary to say that although he has not the power to grant a third term to loaves and fishes, the clams, corn, fish and other comestibles, belonging to the animal, vegetable and mineral kingdoms, were in quantity sufficient to go round, and leave a handsome residue; and in quality, succulent and toothsome.

On arrival at Providence, the party was met by a sufficient number of vehicles to carry them to the picnic grounds.

Many of the telephone men visited the Exchange, and were pleased with the order and regularity which were noticeable there, under the command of Supt. Duxbury. The clam dinner was provided at the Bondholders' Club House, a beautiful retreat on the banks of the Pawtuxet.

On the way to the appointed place, the visitors were waylaid by a couple of road agents with steel gray eyes who demanded any sum from one dollar to five.

As none of the party had any arms, the several amounts were voluntarily contributed.

The proceedings at the Club House were initiated by a 15 to 20 minutes' speech by Ex-Governor Howard of Connecticut, who remarked upon the necessity of a high character in the management and employés of the telephonic service.

An excellent lunch was served, consisting of clam fritters, fried eels and other "fixins."

The time between lunch and four o'clock was taken up with the usual modicum of the wild sports of the world, such as baseball, football, sack racing, boat racing, target shooting, &c.

The clam dinner was simply first-class. Just before the guests sat down to dinner, Mr. Phillips made a few remarks of welcome.

After the dinner occurred the principal event of the day.

Mr. Sabin, of San Francisco, thanked Mr. Phillips for his unbounded hospitality, and introduced Mr. Ralph W. Pope, of New York, who after stating that it was 14 years since he had opened his first Rhode Island clam, and once more speaking of the high appreciation which the electrical fraternity had of Mr. Phillips's virtues, presented Mr. Phillips on behalf of the above fraternity, with an elegant silver service, consisting of a wine cooler, water cooler, butter and sugar dishes, cream pitcher, tea-pot, &c.

The service was very rich, being triple plate outside and gold lining.

Mr. Phillips, who was completely surprised, thought at first that the covered service was some kind of a joke; and thanked the assembly most felicitously.

The motive of the road agents, we have already referred to, was thus made clear.

After an amusing tub race, in which there were three entrees, and in which but one of the contestants was able to reach the opposite shore, a distance of 80 feet, and several stories and character songs, the guests separated, all pleased with the day, with themselves, with their entertainment and with their host.

We read that cast iron pipes are now being made to receive the underground telegraph cable which in a few months will put Paris in direct communication with Marseilles. One hundred and fifty navvies are engaged in this work, which is being prosecuted from both ends along the right bank of the Rhone, and following the main roads. The work is pushed forward with vigor, and it is proposed eventually to connect this cable, which will traverse France from north to south, with the cables of the Mediteranean and Atlantic.

On October 11, there will be a Congress of Electricians in Paris. Among other subjects to come before the members will be the determination of the length of the mercury column equivalent to the practical ohm; the construction of lightning conductors and the influence of telegraph and other wires on electric storms: the means of establishing a general system for observing electricity, and the meteorological importance of the transmission of intelligence by electricity. A Diplomatic Congress will also consider the subject of telegraph cable protection. It is thought that M. Cochery will preside over the former meeting and M. Duclero over the latter.

Davenport, Iowa.—A Newspaper Plant.

The Davenport *Gazette* Company has ordered a plant of 120 B. lights for use in connection with the business of the Company, to light the composing-room of the *Gazette*, and to light the post-office. The Edison plant will be installed at once.

Santiago, Chili.—Plant in the University.

An E dynamo, 15 A lights is running in the University of Chili. On the evening of July 12th, Professor Luiz Zegurs, Department of Physics, in a lecture on electric lighting, exhibited the Edison plant, and after various experiments with arc lamps, explained the Edison system. He paid a high tribute to Mr. Edison for his electric light inventions. Among the experiments exhibited by the Professor were those of burning an Edison colored lamp in water, fusing safety-catches, breaking lamps wrapped in cotton cloth without igniting the cloth, and regulating the lights by means of resistance boxes. The experiments were received with enthusiasm on the part of the large audience present.

Edison Factory in France.

Owing to the fact that under the French patent laws, lamps, dynamos, meters, and all other apparatus constituting the Edison system and covered by Edison's French patents, must be manufactured in France, there has necessarily been some delay in starting this light in that country, pending the equipment and starting of factories. The European Com-

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The Western Union Telegraph Company has declared its usual quarterly dividend of 1½ per cent., payable Oct 16. The net earnings of the quarter ending Sept. 30, are reported officially at $2,250,000, and the remainder left after paying the dividend and fixed charges will increase the surplus of the company to $2,587,620. Dr. Norvin Green has announced his intention of retiring from the Presidency at the expiration of his term.

A recent number of the *Kansas City Times* announces that the Hon. E. T. Gilliland, of Indianapolis, Indiana, has been elected to the presidency of the Missouri and Kansas Telephone Company, with a capital of $1,000,000, having headquarters in Kansas City. In the management of telephone affairs Mr. Gilliland has been extraordinarily successful.

Among the recent visitors to New York was Mr. P. V. De Graw, departmental and committee reporter for the Associated Press at Washington. Mr. De Graw has been absent from New York for several years, but he will be vividly remembered by many of his contemporaries of seven or eight years ago as one of the telegraphers belonging to the ideal school.

Continental versus Morse.

According to one of our English cousins who came over to introduce the Wheatstone automatic system, "As the bloody spaced letters that play hob with a fellow's 'ead, don't you see. If we could use the Continental alphabet over here, we should do much better." In view of this declaration, it is pertinent to mention that the spaced letters haven't troubled Morse senders in this country very much of late years, and the result is a constantly-increasing crop of errors. Senders who make c, o, r, y, z, etc., correctly are the exception, and not the rule. There seems to be some ground for fearing that the Continental may in time become a necessity if the existing disposition to make c, r and s so nearly alike continues to increase. This would be unfortunate, for no alphabet possessing the rythm of the Morse, when nicely sent, will ever be offered as a substitute for it. Moreover, it is short and crisp, while the Continental is slow and sluggish. However, there is no denying that the spaced letters are not as well made by Morse men as they should be, and the old rule of writing such words as "person" with the e following closely upon the p, with a fair space before the r to distinguish it from "poison," is fast being ignored. The liability to error in the use of the spaced letters is no greater than with the dashed letters, but if slovenly made—which is often the case nowadays — it is not singular that orders for "slams," instead of "clams," and references to highway "sobberies" are among the recent blunders. The modern receiver is as near an automaton as a human machine can be, and he does his work mechanically, taking whatever comes to him without regard to sense or logic. The sending operator can therefore make or unmake the best of receivers. The writer once saw a press dispatch saying that "the grist 700 was carried down the stream," and it was the work of an expert receiver whose mind was running, no doubt, on how he was going to pay his grocery bill rather than on what he was doing. But "grist mill" should never be sent "grist 700" There is no excuse for it. One of these days there will be a reaction, and the present tendency of young operators to give their sending the sound of rats running over a tin roof will be succeeded by an effort to render the letters as they were made in the olden time, and when there was no mistaking them.

It would also be interesting to know to what extent duplexes and quads are responsible for another departure from good sense and correct taste—we refer to the existing fashion of sending an r like a d, an f like en, a w like em, etc., etc. As a result of this new mania, we have recently had "deunion" for "reunion," "six halen" for "six half" and—Heaven save us—"Russian joms!"

Our esteemed correspondent, Mr. John M. Wheeler, of Toledo, Ohio, suggests phonogram as a popular name for a telephonic message.

QUERETARO, E. M., Aug. 25, 1882.

George Worthington, Esq., Proprietor, etc., Review of the Telegraph and Telephone,

MY DEAR SIR.—The State Exposition in progress here (Quaretero) closes August 31. Principal streets and plaza are lighted with Brush electric lights. The Central Telegraph Company's instruments are on exhibition here, and have been working from here to Mexico City. There is a *rush* of mining men, including many Americans and other foreigners to the silver mines at Zacatecas, which are "in bonanza" just now, and the rush for the Guanajuato mines has commenced. * * *

The Mexican Central Railroad was opened Sunday, July 30, to Leon, 541 kilometers from Mexico, and the day was celebrated in grand style.

Wonderful country this, in very many respects. * * * Internal postage between cities, 25c., single weight; postage to United States America, 5c., single weight.

Will send you news items by next steamer, and a letter (No. 2) after that.

Have just made acquaintance of Mr. J. McLean here, in charge of electric light for Barron, Forbes & Co. The latter have the exclusive privileges for the Republic – Brush light. Only cities lighted now are Mexico, Queretaro, Zacatecas. Guadalajara will be lighted in September. Barron, Forbes & Co. are well-known bankers in Mexico, and control also the gas company there as well as the electric light.

I wrote you about the Mexican Railroad from Vera Cruz to Mexico. The Mexican *National* Railroad, while not showing such heavy grades, is a most remarkable one in respect to engineering difficulties. In a distance of two and a half miles, from Riondo to Dos Rios, are twenty-one railroad bridges. The road is finished, and running from Mexico to Toluca—only 46 miles—but is surveyed all the way to Laredo, at the borders of Texas, and 28,000 men are working hard on the grading.

I write hurriedly, and will close by saying that the telephone business is thriving here, and will prove a bonanza. Men all well.

My love to Charley Small and any others who may inquire. Your July 1st and 15th issues are "immense." Hope to hear from you soon. G. L. W.

The appointment of Mr. O. E. Madden to the position of Assistant General-Manager of the American Bell Telephone Company was made during the session of the Convention, and was received by the telephonists there gathered with a cordiality that must have been exceedingly gratifying to the late superintendent of agencies. His presence in Room 204 (of happy memory) was made the occasion of an impromptu reception, and in which Gov. Jewell, Secretary Tyler, General-Manager Vail and others made and responded to toasts appropriate to the occasion, and all united in congratulations over the honor conferred, which had been so well earned and will be so worthily worn. May long life and prosperity attend the A. G. M. until in "proper time" (*vide* Gov. Jewell) he is called up higher.

At the recent Telephone convention, Special Agents Truex, Doolittle, Knight, Boyd and Brown, established their headquarters at the Hotel Vendome, in Parlor 204, and we must say are entitled to unstinted praise for their efforts and success in making everyone feel at home. Boston is happily provided with objects of interest to suit all tastes, and those gentlemen were not slow to discern the preferences of each, and for this reason all were made happy in their own peculiar way. In the selection of men to fill positions, we catch a glimpse of the wonderful management which characterizes the American Bell Telephone Company, and which excites the admiration of the business

world. Number 204 will long be remembered by all who were fortunate enough to share in its hospitalities.

Horace H. Eldred, Esq., one of the principal vendors of the London and Globe Telephone and Maintenance Company, Limited, arrived in New York, from London, on the 7th inst., looking as hale and hearty and full of business as in the early days of Telephony when in charge of the Western Uuion interests as General Manager. He was greeted by a host of friends. We believe he expects to return to London to look after his large interests there at an early day.

We believe that the most critical and fastidious readers in the telephonic field will be delighted and thoroughly satisfied with Mr. Lockwood's entertaining and elaborate sketches concerning the Convention and other matters of import. His instructive and able articles long since won the gratitude of all connected with this vast interest.

We were very agreeably surprised and entertained yesterday, by a short call from Colonel I. N. Keller, of Texas, Special Agent Doolittle, Mr. F. O. Vaille, of Denver, and General Agent Beetle. On matters telephonic it would indeed be hard to find a quartette who could impart a greater fund of useful information.

General Supt. Carson, Mr. Phillips and Mr. Pope have our warmest thanks for the hearty and able manner in which they advocated Mr. Choate's resolution, suggesting and endorsing an Electrical Exposition, and we shall never quite forgive the Governor and General Supt. Sargent for their dilatory motions and shrewd tactics which killed it. We insist that our President was too conservative in the matter, and for the reasons there stated by Mr. Choate, the delegates should have endorsed it to a man.

Experiments with a submarine telephone were made the other day at Havre in France. A ship was sent out a considerable distance on the ocean with a wire, and the result proved that the voice can be transmitted under water more distinctly and loudly even than on land.

List of Telephone Men, including Delegates, Manufacturers and others Interested in the Business, present at the National Convention.

It proved to be a most difficult and arduous undertaking to get a list of the attendants at the association meeting, but it is believed that the following is approximately correct:

Representing manufacturers: Messrs. Anderson, and Cherry, of Post & Co. Messrs. Doran and Mace, of the Electrical Supply Co. Phillips, Darling and Sawyer, of the Atlantic Manufacturing Co., Providence.

Messrs. Kellogg, Gilliland, Phelps, Brown and Beetle and Butler, of the Western Electric Co. McCarty, of Davis & Watts; Messrs. Chas. Williams, Jr., Lane, Harrington, and Russell, of the establishment of Mr. Williams, Boston. Messrs. Palmer and Rolfe, of the Utica Fire Alarm Telegraph Co. Mr. Smith, of the Washburn and Moen Wire Co., and Mr. C. B. Hotchkiss, of Kerite cable fame.

The American Bell Telephone Co. was represented by Messrs. Truex, Boyd, Brown, Knight and Doolittle, special agents; by Mr. T. D. Lockwood, of the Electrical Department, and Mr. Richards, stenographer.

Exchange representatives. The following gentlemen were present and are arranged alphabetically: Anthony; Jas. P. Davis, N. Y.; Dwight, Downs, Duxbury, Balch, Babcock, Beach, Baker, Betts, Bigler, Bundy, Cartwright, Bliss, Bingham, Butler, Burleigh, Bailey, R. M. Clark of So. Framingham, Clark, Louisville; Chinnock, Carpenter, Cowles, Clute, Childs, Chamberlin, Champlin, Choate, Cornish, Cairnes, Eckert, Eastabrook, Frost, Fay, French, Gardner, Gifford, Glidden, of Lowell, Glidden, Manchester; Gill, Hall, Haskins, H. C. Hatch, Hunt, Huck, Ivers, Ingham, Jewell, Jilson, Jackson, Jepson, Keller, Knapp, Langham, Leland, Morton, Mason T. Mason, Mather, Metzger, Myers, McDaniels, Maynard, McFarland, Marks, Merrihew, Murphy, Newell, Nightingale, Nicholson, Platt, Peck, Phillips, Pope, Parker, Ross, Reyburn, Ransom, Reid, Sherman, Shiras, Bullock, Stone, Stout, Sargent, Shaw, Speed, Shannon, Sabin, Storke, Spang, Stahler, Sylvester, Tyler, Timpson, Uline, Vaille, Waelk, Whiteman, Wood, Westbrook, Wagoner, and Young.

The Electrical Press was repesented by Messrs. W. J. Johnstone, of the *Operator*, and George Worthington, of the NEW YORK REVIEW OF THE TELEGRAPH AND TELEPHONE.

Exhibits of Manufacturers and Dealers in Supplies at Annual Meeting of the National Telephone Exchange Association.

Although the number of exhibitors at the Boston meeting of the Telephone Exchange Association was scarcely as large as heretofore, it is safe to say that for tastefulness, excellence and variety the goods displayed were unequaled by the exhibits of any previous meeting.

The exhibitors were the Western Electric Company, of Chicago and New York; the Indianapolis Department of the same, formerly the Gilliland Company; Charles Williams, Jr., of Boston; Post & Co., Cincinnati; Davis & Watts, of Baltimore; Washburn & Moen, Worcester; the Electrical Supply Company, of New York; the Mansfield Bolt and Nut Company, of Mansfield, Ohio; Eugene F. Phillips, Providence, R. I.; the Utica Fire Alarm Telegraph Company, Utica, N. Y.; the Telephonic Signal Corporation, New Bedford; and Augustus Wright, of Providence

The first four firms mentioned are licensed to manufacture under the patents owned by the American Bell Telephone Company, and their display was decidedly one of the most brilliant and attractive features of the gathering.

The Western Electric Company, from its shops in New York and Chicago, sent some very fine specimens of its standard switchboards, arranged with cords, and wedges having automatic take-ups. The duplicate board was also exhibited by this company, fitted with the try circuit, as operated at Indianapolis.

Very complete was their array of bells of every kindred and character and description under heaven: the standard Western Electric magnet bell, accompanied by vibrating bells, extension bells, rheostats, call-boxes, galvanometers and pole-changers.

Covered wires and flexible cords had also a place among the goods of this company, while in one corner stood a cable case, filled with samples of cables made both for ærial and subaqueous use.

A long roll of cable was also shown on a reel. It contained fifty conductors and all the necessary apparatus for testing it, including a Thomson galvanometer, a full set of resistance coil, and a condenser stood close by, whereby those scientifically inclined could measure the various electrical properties of the cable for themselves, did they so wish.

One very practical feature of the exhibit of this company was a diagram over each of the principal sets of apparatus, so that every one might understand the nature of the several mechanisms intelligently.

The Gilliland or Indianapolis Department of the above company was in one respect very noticeable.

This was the new magneto-bell just perfected by Mr. E. T. Gilliland. This bell is in many respects a novelty, but so numerous are its excellencies that it cannot long remain so. The specimens arranged for exhibition were each compactly set up in a strong cast-iron box, neatly painted and attached to a base, with battery box below, as usual. The front part of the bell unscrewed from the box, and carried with it all the internal arrangements.

The armature of the generator, instead of being cast iron as heretofore, is of wrought iron, and thus currents of great force are generated, enabling the bell to ring over great distances; after the wire is coiled on the armature, it is packed round with soft metal. The driving gear consists of a soft metal spur wheel, which works into a soft rubber pinion, thus furnishing a motion reliable, yet noiseless. The magnets are unusually large, and furnish great power. The bell and hammer are both adjustable, and may be easily disconnected entirely, and the automatic switch is the best ever put out. Every part of this bell is interchangeable, and the samples exhibited were finished with mahogany base, the *tout ensemble* being very rich.

It is, of course, unnecessary to say that it is not proposed to furnish bases usually of mahogany, but of the regular black walnut. The old prices will probably be maintained.

Altogether, this is a new departure in bells, and we prophesy that it will be a successful one.

Besides this bell, several samples of the well-known Gilliland switchboards, complete, were on hand, as also some desk sets of great beauty.

The display of Charles Williams, Jr., was remarkable for the complete finish of the various pieces of mechanism.

Three of his standard switchboards were shown, comprising, respectively, seventy-five, fifty, and twenty-five annunciators each.

Each of these boards were fitted with shutter-drops, and all were arranged for looping in the supervising telephones.

A large assortment of magneto-bells was also exhibited by Mr. Williams.

These, which were in woods of different kinds, viz.: ebonized cherry, ash, walnut, and bird's-eye maple, attracted much attention and admiration, particularly the first, which was fitted with a very handsome and perfectly-made bell apparatus, the works of which were left open to view.

A power generator, with probably the strongest magnet in the entire display, was also in this department, and the full line of telegraphic and general electrical supplies, ranging from switchboards and galvanometers to press-buttons, lent a roundness to Mr. Williams' collection and showed that he realized that to place goods judiciously, so as to show them off artistically, is as requisite as to maintain the excellent character of the same goods. Mr. Williams was ably represented by Messrs. Harrington and Russell.

Post & Co., as they always do, showed nothing but good things. Their bells were, as usual, solid, unassuming in appearance, and powerful.

Post & Co. deserve great credit as being the first manufacturers to introduce bells, which, when the telephone is in place, are completely severed from the transmitter.

They also showed large and small generators, some handsome combinations of steel, brass, and copper, in the shape of pole-changers, a switchboard, and last, but by no means least, their world-renowned telephone paper-weight, which has found its way probably into every telephone exchange in the United States and Canada.

Davis & Watts had a small but neat assortment of compact generators, complete magneto bells, exten-

sion bells, small switches, and their magneto bells were noticeable for their small size, although it is claimed that they give as good service as if they were much larger.

Eugene F. Phillips was, as usual, on hand, and was represented both by himself in proper person, and also by Messrs. Sawyer & Darling. Mr. Phillips and his excellent wares—or, should we say, wires?—are so well and favorably known that there is little left to be said about them.

In addition to his usual brave array of covered wires, braided and colored of all sizes, and his flexible cords, aerial cables formed a specialty; these were of the celebrated type, in which each wire is separately covered with rubber, then with tinfoil, while over the group a second sheath of rubber is placed, the whole being then surrounded by woven canvas.

Two striking Japanese pictures formed a suitable background for Mr. Phillips's Oriental collection, and although Mr. Sawyer disclaimed their ownership, it is suspected that he shrewdly saw their advantages, and placed his exhibit accordingly.

In connection with the exposition of Mr. Phillips, was shown the new method of suspending cables, and suspending wire and hook by which it is made operative.

The Electrical Supply Company of New York showed their Diamond Carbon Battery and several good samples of covered wire.

Washburn & Moen exhibited some coils of iron and steel wire, and descriptive cards stating the electrical properties thereof.

The Telephonic Signal Corporation showed some signs of vitality by exhibiting a few of its individual clock signals, and a new exhibitor. The Mansfield Bolt and Nut Company, of Mansfield, Ohio, showed a novelty in gimlet-pointed lag screws.

The Utica Fire Alarm Telegraph Company made no very extensive exhibit; their apparatus being shipped to New York for exhibition in the American Institute Fair, New York.

But the articles which they did show merit a very high grade of commendation, on account of their intrinsic usefulness. Inspectors' and linemen's tools of various description were quite a feature in this exhibit as in no other, while the selection of this firm in the matter of call-bells, though small, was very choice.

The Stabler Individual Bell was represented at the association, and worked to a charm. If only the individual bell would work as well on an actual line, as it invariably does on the wall of a laboratory or experimenting room, what an unspeakable comfort it would be.

A brief description of the construction and operation of this bell may be of interest to those engaged in telephony, and is here appended:

A polarized armature, vibrating between two electro magnets, carries two push and pull pawls, which give motion to a ratchet wheel mounted upon a shaft to one end of which is attached a traveling switch which revolves in contact with a dial rim, said switch and rim forming parts of a line circuit. By the proper application of to-and-fro currents, to a number of such instruments, they may be made to move in exact unison, and by cutting away a portion of each dial rim at a proper point and inserting a circuit shunt, the switches may be caused to make contact with the shunts successively. The bells being placed in the shunt circuits are cut out, except when in the revolution of the switches they make contact with said shunts.

The Central Office instrument has the same motive mechanism, but, in addition has a series of radial keys arranged around its dial and corresponding in position with the several shunts of the station instruments. By the depression of any one of these keys, which are numbered, the circuit is closed and the switches are all actuated until that corresponding with the key depressed has reached its shunt, at which moment the instruments are automatically cut out. A current of greater strength is then sent over the line, by depressing another key, and the bell which is adjusted to resist the weaker current is sounded. The telephone is thrown in and the bell cut out by the usual automatic switch. A unison stop is attached to each instrument by which uniformity of movement may be restored to the whole set if lost from any cause. Each box is supplied with a small generator for calling the Central Office.

The arrangement of connections is such, that when two persons on different wires are in communication all others on those lines are completely cut out.

The electro-motive power is supplied by two small Siemens' armatures which may be driven by treadle, or any suitable source of power. They are constructed to give off currents of different strength, which currents are controlled by the keys above described. The manipulation is very simple, and the action so rapid that any desired bell may be brought into action within two seconds.

Altogether, the character of the goods shown was superlatively excellent, reflects great credit upon all concerned; and we can but pity the embarrassment of any one intending to purchase, who, where everything is so good, must find some trouble in choosing, and may be imagined to say in the words of the old song, "How happy could I be with either, were t'other dear charmer away."

Edison's Light Turned On.

DOWN-TOWN BUILDINGS SUPPLIED FROM THE STATION IN PEARL STREET.

Two engines in the Pearl street station of the Edison Electric Illuminating Company were started last evening. Simultaneously thirty little balloon-shaped globes, ranged at intervals on either side of the long room containing the machinery, glowed with incandescent horseshoes. All customers of the company whose buildings have been inspected by the Board of Fire Underwriters were notified that the light was ready for use. The Drexel building, containing 100 lights, the *Times* office, the Park Bank, and the *Herald* office were among the places lighted last night by electric currents from the station in Pearl street.

Mr. Edison was seen by a reporter in the long, illuminated room. He wore a white, high-crowned Derby hat and a collarless shirt. His face denoted that he was greatly pleased. "I have accomplished all that I promised," he said. "It was not without some fear that I started the machinery this evening. I half expected that some new phenomena would interfere with the working of the light. But it has been entirely successful. You will see that we have only one engine running now. It supplies 800 globes with light. We have six engines, which will all be in successful operation before the end of the winter. We expect to have three running next week. We have a greater demand for the light than we can supply at present, owing to the insufficiency of men to put down the wires. We have to educate the men to the use and management of our machinery. We have only one experienced engineer here now. A man came down from our machine shop in Goerck street the other day and put his oil can between two conductors. He was a badly frightened man a second later, for the can melted away as quickly as the oil that it contained. Another workman, while employed at a wire in Fulton street, used a screw-driver. He was surprised to see his screw-driver burn away, and returned to the station in great haste to know what was the matter."

Taking the reporter up to the second floor of the building, Mr. Edison pointed to two little boxes, each of which was surmounted by a blue globe, between two red globes. There were bells attached to each box. Whenever a bell rang a blue or red globe would be illuminated. Mr. Edison explained that these were the indicators. When the globes were not illumined the electric pressure on the main wires was equal to 16 candles. When the red globe on the left of the blue one one was lighted up the pressure was equal to 16¼ or 16½ candles. When the blue globe was illumined the pressure was equal to 15 candles. The red globe on the right of the blue one, when lighted up, indicated a pressure of less than fifteen candles. A young man sat watching the lights on a high stool with his hands on a wheel. Whenever the bells rang and the globes were lighted up, he turned the wheel until the ringing ceased and the lights went out. What the young man handled was called the regulator.

"Have you ever noticed," said Mr. Edison, "that light contracts the pupil of the eye? I will demonstrate it." He closed his eyes for a half minute. Opening them he called attention to the size of the pupils. He then exposed them to the light. When the reporter looked at the pupils again they seemed to have decreased considerably in size. "That illustrates," continued the inventor, "the desirability of a steady light. It prevents the dilation and contraction of the pupils of the eyes that the fluctuations of an ordinary electric light or gas light would cause."

The electrician said further that eighteen miles of pipe would be laid in the down-town district. Six miles are already laid.—*Ex.*

On the Luminous and Spheroidal Phenomena which Accompany the Electrolysis of Liquids.

By M. Slouguinof.

It has long been known that under certain circumstances electrolysis is accompanied by luminous phenomena at the electrodes, but these appearances have till lately remained almost unnoticed. It has been established that light appears at the electrode with which the circuit of a battery of many elements is closed by plunging it into an electrolyte already connected with the other pole of the battery. The author has found that if two equal electrodes are plunged unequally deep into the electrolyte, on closing the circuit of a sufficiently powerful battery, a luminous phenomenon appears at the electrode, which is less deeply immersed. This electric luminosity may be of two kinds, one of which is a consequence of the spheroidal state which the liquid assumes at one of the electrodes in consequence of the action of the current. Just as metal, when raised to a high temperature, repels any liquid which is brought in contact with it, so a liquid is repelled by a metal which is being traversed by a powerful galvanic current; in other words, both heat and electricity can throw a liquid into the spheroidal state. Both these agencies may occasionally act conjointly. The electro-spheroidal condition is accompanied by a faint luminous appearance. Besides this electolytic light there is also a luminosity of another kind, and if it takes place at the cathode particles of platinum are detached from this electrode. In case of the development of light at the cathode and in a solution of platinum chloride in hydrochloric acid, the intensity of the light depends on the heating of the platinum powder which is there separated.—*Carl's Repertorium der Experimental Physik.*

A Galvanic Element—*By C. Boudot.*—The author modifies a Bunsen element by using, instead of one earthenware cylinder, two, the one placed in the other, both filled with nitric acid. The carbon is placed in the interior vessel.—*Weidemann's Beiblätter.*

Milan—Central Station Plant.

The Italian syndicate controlling the Edison light for Italy has purchased ground for the first central station in Milan. The property, for which the syndicate paid 300,000 francs, consists of a building known as the Theatre of Sa. Radegouda. The main hall, where the steam dynamos will be placed, is a room 140x45 feet. The City Government of Milan have already granted to the Edison syndicate the right of way through the streets, and underground conductors connecting the central station with the buildings of consumers will be laid at once. The most important places first to be lighted are the Theatre La Scala, where 1,000 lamps will be used to illumine the stage alone, and the shops of the Galleria Vittorio Emanuele. Professor Colombo, of the Royal Polytechnic School of Milan, and the Technical Director of the Edison Italian syndicate, is now in New York City supervising the shipment of the central station plant to Milan. Three steam dynamos, the same as are used in the Pearl street station, New York City, have already been shipped, and the rest of the equipment is being forwarded as rapidly as possible.

The Rosebrugh & Black Telephonic System.

To the Editor of the Review:

SIR:—In your editorial recently on the Rhysselburghe telephonic system, you make reference to the Rosebrugh & Black telephone system. It has occurred to me that a fuller description of the latter might prove interesting.

The object of this system is to be able to use the telephone and the Morse apparatus on the same wire or wires at one and the same time. This telephonic system may be worked in one of several ways.

1st. A single wire may be used and the telephones inserted either in derived or branch lines of the same.

2d. Two parallel wires may be used as a single conductor.

3d. Two wires preferably parallel may be used to form a metallic circuit.

In branch lines a telephone is inserted in the ground wire to prevent grounding of the line. Where two lines are used as a single conductor, a branch line with a condenser inserted therein, extends from each (at each end of the telephone line), the two branch lines are connected and attached to one pole of the telephonic apparatus. The other pole goes to ground. In using parallel wires to form a metallic circuit, the telephonic apparatus is inserted between them and a condenser used to prevent crossing of the wires. When the telephonic apparatus is used in a derived line, the condenser and telephonic apparatus are used as a cut-out for the key and relay.

We propose to diminish or neutralize the effect of foreign induced currents by bridging all the keys with condensers, and arranging all the wires of a given line in parallel couplets, and using said couplets for the telephonic system. When parallel wires are used as a single conductor the effect of foreign induced currents is not only neutralized but the resistance of the line is diminished.

In addition to the use of the telephone as here indicated, we believe there are thousands of places where the telephone might be economically placed either as an auxilliary to, or a substitute for, the ordinary telegraphic instruments. A practical application of the telephonic metallic circuit would be to place telephonic apparatus on railroad trains, and in case of accident between stations, to run out two wires, attach them to the parallel wires of said metallic circuit, and communicate with the nearest station supplied with similar apparatus. This will not require a practical telegraph operator.

For calling attention, either a rheotome or a magneto signal may be used.

I may add that on long lines beyond the capacity of the telephone transmitter we propose to use a telephonic telegraph, a description of which will be deferred for a future communication.

Yours,

A. M. ROSEBRUGH, M.D.

Mr. J. A. Berly, of 16 New Bridge Street, London, publisher of BERLY'S BRITISH, CONTINENTAL AND AMERICAN ELECTRICAL DIRECTORY, announces that the 1883 edition of the above work will contain full lists of all persons connected directly or indirectly in the trade or professionally with the Science of Electricity, the plan of the work being to furnish a convenient handbook for the use of electricians and manufacturers in Europe and America. Every one desiring their names to appear in the work should address the undersigned immediately, giving full particulars of business, etc., as it is desirable that the directory shall be as complete as possible.

The retail price of the work will be $1.50, and will include a *résumé* of the past year's work, together with valuable tables, formulæ, etc.

The names will be arranged under appropriate trade headings, and also altogether alphabetically.

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Reliable agents wanted in all the principal cities of North and South America. Address all communications, GEORGE CUMMING, General Agent for Berly's Electrical Directory, 219 East 18th Street, New York City, U. S. A.

The Great Wheat Harvest.

Whatever the exact figures as to the wheat crop may some months hence be ascertained to be, there is no doubt that the wheat harvest of 1882 is by far the greatest in the history of the country. An average of the estimates of the leading statisticians would be about 550,000,000 bushels. *Bradstreet's* estimate is 526,400,000 bushels, but it is believed to be generally about 10 per cent. too low in its estimates. Some intelligent judges have estimated the crop as high as 600,000,000 bushels, nearly one-fifth more than the great crop of 1880. The changes in the acreage of wheat during the last twelve years make an interesting study:

	Acres.	Yield in bushels.	Per acre.
1871	19,943,893	236,722,400	11.5
1872	20,858,359	249,997,100	11.9
1873	22,171,676	281,254,700	12.7
1874	24,967,927	309,102,700	12.3
1875	26,381,512	292,136,000	11.0
1876	27,627,021	289,256,500	10.4
1877	27,277,546	364,194,147	13.9
1878	32,108,506	420,122,400	13.1
1879	32,545,950	448,756,630	13.8
1880	36,037,050	480,849,723	13.8
1881	36,003,000	356,009,000	9.8
1882	37,000,000	550,000,000	14 9

The above estimate of the acreage of 1882 may be somewhat high, but that of the amount produced is not. It is evident, therefore, that the surplus for exportation will equal, if not exceed, the entire crop of ten years ago. In 1880 our exports of wheat amounted to 199,000,000 bushels, the foreign demand being 300,000,000 bushels. The demand may not be more than 250,000,000 bushels this year, so that the surplus of the United States would supply it, were there no other countries to export wheat.

[*From the Providence Press.*]

Click-Click, Hello!

GATHERING OF TELEGRAPHERS, TELEPHONE AND ELECTRIC LIGHT MEN AT THE BONDHOLDERS.

Mr. Eugene F. Phillips, manufacturer of covered telegraph wire and telegraph supplies, entertained a noted company of gentlemen at the "Bondholders," at Pawtuxet, on Friday, in a right royal manner. There were present representatives of the telegraph, telephone and electric light interests, from the rocky shores and extensive pine forests of Maine to the golden shores on the western slope of the Rocky Mountains. The local interests were well represented. There were Messrs. Howard, Duxbury & White from the Telephone Company, Anthony from the Mutual Union, Suesman from the American Rapid, Sheehan and Hulbert from the Western Union, and Brown of the Electric Lighting Company. The company numbered about 125, and were present as the guests of Mr. Phillips, who tendered them a complimentary clambake.

The greater portion of the company went down to Pawtuxet at 10 o'clock, taking party wagons from Exchange place, and up to 2 o'clock there were constant accessions to the ranks. Soon after arriving at the Bondholders, a game of foot-ball was started in one of the fields, while two nines played base ball in another portion of the grounds. At the conclusion of these sports, Ex-Gov. Henry A. Howard made an interesting speech, in which he welcomed the visitors to the shores of the peaceful Pawtuxet. Then a wheelbarrow race was started, which was won by a Mr. Jennison. Two sack races followed, in which Mr. Brice Scott and Mr. Jennison came out the victors. By this time the party had worked up fine appetites, and at 12 o'clock lunch was served, consisting of clam and chicken chowders, clam cakes, baked fish, fried eels and raw oysters and quahaugs. Two boat races were next started, Messrs. White and Garcia finishing first amidst great applause from those on the river bank. From this time up to half past 2 o'clock, foot-ball, base ball throwing and target practice were in order, the rain driving everyone under cover. At 3 o'clock the bake was opened, and it was a delicious one, too. There were clams, oysters, sweet potatoes, corn lobsters, Indian pudding with cream, watermelon being the last course. Just as the gentlemen were leaving the dining room a large basket was quietly brought into the ante-room and its contents were placed on a table and hastily covered by a cloth.

The table was then carried close to the chair in which Mr. Phillips sat, but so well was the transportation made that he had no idea that anything out of the usual run of events had or was about to transpire. Mr. John I. Sabine, of San Francisco, mounted upon a stool and calling the company to order, began an address which was rather mystifying to Mr. Phillips, particularly so when the speaker called upon Mr. Ralph Pope, of New York, to say a few words to the host in behalf of his guests. Mr. Pope returned thanks for the entertainment of the company and giving the signal, caused the men nearest him to fall back, disclosing to view the table before mentioned. The cloth was removed and on the table was found an elegant set of hammered silver, a hammered silver water urn and a large silver champagne cooler. These were given to Mr. Phillips as a slight token of the kindly feeling of his guests towards him. Mr. Phillips was thoroughly surprised, but managed to express his hearty thanks for their kind remembrance. The silver ware was bought with the funds derived from a spontaneous contribution which was taken up on the grounds just after the luncheon was partaken of. After this an exciting tub race created a good deal of merriment, as did also a three-legged race. At 6 o'clock the company reembarked in the party wagons, and came to the city, the western men leaving for New York at 7.20 *via* the Providence line. This is the fourth annual gathering of the electric fraternity, and, like its predecessors, was a red-letter day in the lives of those who participated in it.

Telegraphic and Telephonic Notes.

Western Union Figures.

STATEMENTS LAID BEFORE THE DIRECTORS BY DR. GREEN ON THE EVE OF HIS RESIGNATION.

At the quarterly meeting of directors of the Western Union Telegraph Company yesterday, Dr. Norvin Green, President of that company, announced that he will resign his office at the annual meeting of stockholders, on October 11th, next. He said that he had promised himself and his family that he would not attempt to perform the responsible and wearing duties of the office for a longer period than five years, and that period will close with the expiration of his present term of office. It is said that Dr. Green contemplates going West with the large fortune with which he will retire from his present position. The only names prominently mentioned in connection with the succession is that of Jay Gould and General Eckert.

Dr. Green told the directors yesterday that the statistics prepared for his next annual report are in hand, and that, compared with the last annual report of his predecessor, for the fiscal year ending June 30, 1877, his report will show gross receipts of over $17, 100,000, and net profits of over $7,100,000, as against gross receipts of $9,800,000, and net profits of $3,-100,000—an increase in five years of 80 per cent. in the gross revenues, and of over 130 per cent. in the net profits, while the rate of expenditures has been reduced from 69 per cent. to 58 per cent. of the gross revenues. In the past five years the mileage of lines has been increased from 79,955 to 131,032, and of wires from 19,4233 to 374,294 miles; the number of offices from 7,500 to 12,050; and the number of messages from 21,158,941 to 39,000,000, not including messages sent over wires leased to the press and to brokers, and a very large number of messages sent for railway companies, of which no account is taken, "showing an increase of over 90 per cent. in the plant, 60 per cent. in the number of offices, and (including the growing railroad service) of more than 100 per cent. in the amount of work done over the wires."

Jules Guthridge, of the Second Comptroller's office United States Treasury, Washington, has been passing his furlough in New York. Mr. Guthridge bears his years easily and looks as young as he did ten years ago when he was bohemianizing out on the Pacific coast. He combines with his government position a great deal of newspaper work of a very excellent quality.

The delegates to the National Telephone Convention of 1882, will not soon forget the pleasant meeting at the Vendome, the courtesies extended by the general manager and his special agents, the banquet at Nantasket and the clambake and entertainment furnished by Mr. Phillips at Squantum.

We sincerely hope that General Superintendent Choate, of Washington, will continue to advocate the electrical exposition scheme, which we believe is sure to meet with the right kind of support and success at an early day.

We think something more than a vote of thanks is due to those popular and able gentlemen (already so widely known in this country as the special agents of the American Bell Telephone Company), who extended so many courtesies to the delegates to the Convention at the Hotel Vendome, and whose personal efforts contributed so much towards making the affair such a complete success. We give below the names and territory under the charge of these gentlemen.

R. G. Boyd, Esq., Ohio, Illinois, Indiana, Kentucky, Tennessee and West Virginia. Charles R. Truex, Esq., the Middle States. Thomas B. Doolittle, Esq. the New England States. F. B. Knight, Esq , the territory lying west of the Mississippi River. Major J. M. Brown, the Southern States on Atlantic seaboard. These gentlemen report to General Manager Theo. N. Vail. Judging from what we see has been accomplished by this company during the three years last past, we believe it is not too much to say, that no organization or company in this country is more ably and efficiently officered, its success is unparalleled in the business history of this or any other country.

In addition to his other titles we are glad to notice, as elsewhere stated, that O. E. Madden, Esq., Supt. of Agencies of the American Bell Telephone Company, has been made Assistant General Manager the duties of which office he has performed for a long time past. We have not seen a more fitting distinction. His duties have been of a peculiar nature, such as required a very high order of executive ability and business experience.

The *Scientific American* attributes the establishment of the first telegraph line in this country and on Long Island, to Mr. Harrison A. Dyar.

We understand the veteran telegrapher, Mr. Geo. L. Beetle, beat all his previous good records of sales at the Boston convention last week; he is said to have taken orders for over twelve hundred of the new magneto bell, manufactured by the Western Electric Company. It is tolerably safe to predict that the poet will win when he is backed by Colonel Keller with all his dynamo power and radiant energy. These Texas heroes seem never to weary of doing good, and the cares and turmoil of business sits lightly on their broad shoulders.

"Telegraph blue" is a new color. It is the shade of a man's face when he gets a despatch from his broker asking for more margin.—*Boston Commercial Bulletin.*

It was unanimously voted by the guests of the American Bell Telephone Company that Mr. Thomas B. Bailey earned a diploma at Nantasket Beach on Thursday last.

Arabi does not know when he was born. He will soon be in a position not to give information as to the precise time when he died.

Said an old gentleman, patronizingly, to a bright little fellow: "Be a good boy, my little man, and you may be President." "Yes, I may be," the wide-awake youth replied: "but you don't want to gamble on it."—*Cincinnati Saturday Night.*

The sting of a bee is only one thirty-second of an inch long. It is your imaginaion that makes it seem as long as a hoe-handle.—*Detroit Free Press.*

There are 60,000 miles of telephone wire in this country, and it is estimated that 80,000,000 communications are annually sent over the wires.

The presentation of the very elegant cane to Mr. John I. Sabine, of San Francisco, at the Convention by his Boston friends, was a happy affair and deserves special mention, and we regret that the interesting speech of Mr. Knight did not reach us in time for publication.

Electric Railway in Switzerland.

GENEVA.—A syndicate of London capitalists have entered into a contract for the contruction of an electric railway upon the Edison system between Geneva and Fernex and Geneva and St. Julian.

The Post Office and the Telephone.

To the Editors of the Electrical Review:

SIRS,—The public have read with extreme gratification that our liberal Postmaster-General has relieved the telephone industry of the one difficulty which attended its extension, by promising to license the operations of all telephone companies.

Last winter I addressed a crowded meeting in the Theatre of the Society of Arts, under the presidentship of the Right Honorable E. P. Bouverie, on the subject of this industry and the great public benefits which would accrue from the wide extension of telephone exchanges throughout the land, at rates of subscription which would bring it within the reach of every one for social as well as commercial purposes, and still return a handsome profit to the undertakers.

In noticing the slow progress the use of the telephone exchange has made in the United Kingdom, in comparison with other countries, I showed the audience how the construction, maintenance, and working of the systems should be adapted to the wants and prejudices of the public at large, and how necessary it was to commence operations, so as to avoid the natural dislike of the community to the unsightliness and inconvenience of the ordinary poles and wires of our telegraphs, and that the true way to overcome these obstacles was to enlist the public of each locality in the establishment of telephony for the use and convenience of the majority.

The application of this simple and naturally cheap help to the daily transactions of life is an infinitely easier matter than that of electric lighting, and yet we see the public investing deeply in those industries and almost neglecting the telephone industry altogether.

It can be easily shown that the establishment of a telephone exchange of one hundred subscribers, within a square mile, and costing each subscriber not more than 6d. a day, will safely pay an interest of more than 15 per cent. to the capitalist, after providing 65 per cent. for working, maintenance, and renewal expenses, and that every further extension in the same area will largely increase that return.

It is to be reaped in any part of the kingdom in which one hundred persons, able and willing to subscribe 6d. a day for the convenience, can be found within a square mile. All experience in other countries shows that once introduced it spreads rapidly, and once established, it becomes a necessity, like water, light, &c.

The money value of the saving in labor to the community is far in excess in proportion to the value of the plant, in comparison with the saving arising for like reasons out of the use of the State telegraphs, because the average traffic is far more and the cost of manipulators is saved, as the public speaks its own messages.

A bill somewhat on the same lines as that for electric lighting would smooth any difficulties which are still encountered in the extension of the telephone systems, and by cheapening the first cost to the companies undertaking the work, would also cheapen the service to the public. Bills of this kind have generally to be promoted by industries. The public cannot do better than support by their adhesion the companies which now appear to be springing up, with the object of extending true, cheap telephony. The ultimate reward to good work and good management is so secure, if the companies are established and worked on sound financial principles, that there is no industry which can offer fewer risks to the investor.

The objection to the public use of the fundamental principles of the invention, raised by the owners of patents, can never stand before the fair test of a scientific investigation.

All monopolies must fall immediately the public

becomes aware that they are standing in the way of a great social necessity.

C. E. WEBBER,
President Society Telegraph Engineers and of Electricians.

On the Amplitude of Telephonic Vibrations.

BY M. G. SALET.

Every one knows that it is possible to hear through a fir-wood door of little thickness words spoken in a room otherwise entirely closed. In this case, the sonorous vibrations transmitted by the air shake synchronously the side of the wood, and this in turn transmits its motion to the external air just as a movable piston might do. This familiar experiment ought, it may seem, to have struck physicists, since it gives a proof of the sensibility of the ear. The vibrations of the wood are, indeed, very small, scarcely larger than those of the receiving membrane of a telephone when in action, but these latter are so slight that their very existence has sometimes been called in question. They exist, however, and I am about to give an idea of their amplitude. I fixed upon the iron diaphragm of a hand-telephone of Bell's system a small disc of glass, weighing 0.45 gram. Opposite this I fixed a second, yielding with the former, Newton's rings. The apparatus, as will be seen, resembles that which M. Fizeau devised for studying expansions. If we speak at the distance of five to six meters from the telephone, or if we direct against it a telephonic current produced by means of a good transmitter (that of Boettscher, for instance, which does not require the use of a battery), we see the rings lose their distinctness and disappear if the voice is raised a little. They vibrate, in fact, themselves, synchronously with the iron diaphragm, and nothing is more simple than to calculate the amplitude of the vibrations of the diaphragm from that of their oscillations.

It is certain that the additional weight of 0.45 grams placed upon the diaphragm, must render its movements somewhat less extensive; hence the results obtained fail rather on the side of deficiency than of excess.

To value the displacement of the rings, we arrange before the telephonic receiver, into which a continuous sound is emitted, a turning disc pierced with slits. It is found that at a certain speed of rotation the rings reappear distinctly. If we then blow across the disc, making it act a siren, we find that the sound produced is in unison with that transmitted by the telephone. If it lowers or rises slightly, the rings oscillate, at first slowly and then with such a rapidity that they again become invisible. Whilst they oscillate, this displacement may be easily estimated. In an experiment made, the amplitude of the vibrations of the receiving plate was from two to three ten-thousandths of a millimetre.

If we throw into the telephone currents of different intensities, but very small, and none of which produces a displacement of the rings beyond half the distance which separates them, we may, by considering a point of the glass plate infer from its brightness the intensity of the current. This singular galvanometric procedure might, without doubt, be utilized in a telectroscopic receiver.—*Comptes Rendus.*

Another Newspaper Lighted with Edison Lamps.

The Boston Herald building, Boston, is being enlarged and the proprietors of the *Herald*, Messrs. R. M. Pulsifer & Co., have ordered a plant of one L dynamo and 250 ten-candle lamps. The arrangement of the lamps will be 200 in the compositors' room, 35 in the editorial offices and 15 in the engine room. Before finally deciding to introduce the light, Messrs. Pulsifer & Co., inqured of Mr. George W. Childs, of the Philadelphia *Ledger*, how the Edison light was working in his compositors' rooms, and received from him in reply a satisfactory endorsement of our light.

Edison's Company Lighting Up.

FIRST RESULTS OF TWO YEARS OF HARD WORK.—EFFECT UPON THE GAS COMPANIES.

The Edison Electric Light Company, which for the last year and a half has been preparing to light up its first district, bounded by Spruce and Wall Streets, Nassau street and the East River, turned the current into Drexel & Morgan's offices at Wall and Broad streets yesterday, and the light may now be seen there. In summer the advantages of a light which does away with heat and gas odors, and does not vitiate the air as gas does, are not so easily realized as when more light is needed, and the doors and windows are carefully shut. The light, as seen in half a dozen lamps in Drexel & Morgan's office this morning, was perfectly pure, pleasant to the eye, and so much like gas in color that when covered by a ground-glass globe no one can tell whether it is gas or electricity. It is perfectly steady, and has none of the flickering sometimes due in incandescent lamps to the weakness of the engine which drives the dynamo. The powerful engines at the Edison station in Pearl street run without the slightest jar, for the engine-shaft is connected directly with the dynamo, thus doing away with the belt to which in former experiments could be traced most of the unsteadiness in the light. Whenever the ends of the belt in an ordinary engine pass over the fly-wheel the effect can be seen in any lights supplied from dynamos connected with that engine. That is one reason why the six enormous dynamos for 1,250 lights apiece have each an engine as part of the dynamo. There is now running in the Pearl street station one dynamo the current from which is sent to wherever the men are at work joining the street mains to the house mains, so that the lights can be tested as the work goes on. At anytime after this week the houses having their lamps and meters in can use the light. Mr. Edison is at the station every day, highly delighted with the results of his two years' work, and studying out any obstacles which may present themselves.

DISPENSING WITH GAS.

As a result of the completion of the Edison system some of the persons who have introduced the new light have sent to the gas company which has been supplying them with gas and requested that their meters be taken out and their "meter deposit" returned, with interest. In some instances the deposit has remained with the gas company for twenty-five years. The receipt given by gas companies for such deposits stipulates that interest shall be paid, and many old receipts call for interest at seven per cent. The opportunity of ejecting the gas meter and closing up accounts with the gas company seems to give as much pleasure to some persons as the prospect of getting the electric light.

The workmen in the employ of the Edison Company are making connections between street and house mains at the rate of about twenty-five a day. —*Exchange.*

Sweet Oil.

John E. Zeublin is the Western Union superintendent at Philadelphia. A few years ago when he was a superintendent of the American Union Company. things came to such a pass in New Jersey that he dropped his office work one day, and went in person to see a farmer living near Newark, who had threatened to shoot any American Union employe who should attempt to set a pole on his premises. Tradition has it that Zeublin opened negotiations by discussing the relative advantages of sowing uplands with foxtail or herds grass, passing by easy stages to a consideration of the present tendency to drift away from orthodox belief, thence to national affairs and local politics. Then shutting his eyes to the probabilities that Mr. Gould would ultimately amalgamate his company with the Western Union, Zeublin took high ground affecting telegraphic competition—reduced rates—live and let live—and much else of similar import. Gradually and by degrees the old farmer melted and finally he asked:

"Which side the house, Mr. Zeubelong, did you want to put the posts?"

"Either side you prefer," replied Zeublin, concealing his surprise at the easy victory which was now apparent.

"You see," said the farmer apologetically, "we heard this ere Jay Gould was into your concern, and from what the papers say, I kinder thought if he come out here looking over the line he might take anything he could lay his hands onto. And them fellows that been around here putting up posts look like they was just as scaly as the old man himself."

"Mr. Gould," began Zeublin laughing, "is—"

"Never mind Mr. Gould," said the farmer interrupting. "My point is this: I ses to Maria, ses I, 'there must be gentlemen into this concern,' and now I see there is. That is all right, Mr. Zeubelong; just you put up them posts either side the house you like. All I was waiting for was a gentleman. I kep telling Maria there must be gentlemen in the concern —I knowed it."

And so the American Union pulled through New Jersey and made so much brilliant bluster that even in its infancy it succeeded, one morning, in swallowing the Western Union and put its own men on the watch towers of its overgrown and timid antagonist where they are still posted, alert, elate.

Mr. Jay Gould, President Norvin Green, and General Manager Eckert, with a party of several gentlemen, among whom were Mr. John Pender, the great Cable King, of England and the Continent, and Mr. John Fuller, visited the general operating room on the afternoon of the 1st. Dr. Green was looking particularly well. As the years continue to roll over the Doctor he grows younger instead of older in appearance. The party first appeared on the balcony and then were shown through the main room and introduced by Genl. Eckert to Manager Dealy and spent a short time in looking at the Boston motor printer.

Mr. Jesse H. Bunnell, the popular telegraph instrument manufacturer and inventor, who has been passing his vacation at Mr. Van Hoevenburgh's Adirondack lodge, has returned to town as brown as a berry and as full of business as ever.

At 195 Broadway, on the 2d of September, the total number of messages handled on the Hartford quadruplex was 655, all done between 8 A. M. and 5:30 P. M. by Messrs. Crate and Getz. This is considered a very good day's work and is probably not surpassed on any of the circuits except on the printers.

Of the numerous telegraph operators who have learned phonography and secured good positions, Chas. Sweet, is private secretary to Secretary Lincoln; Fred. N. Bassett, private secretary to the Postmaster General; Thomas Sherman, private Secretary to Mr. Blaine, and Edward Canfield, private secretary to Sidney Dillon, President of the Union Pacific Railroad.

F. H., in a letter to the *Times*, suggests that telegram forms should be supplied with a gummed flap, so that they might be folded and delivered sealed at the office for transmission, thereby doing away with the disadvantage of submitting the message to the perusal of the messenger.

"The Fire-Clean-Pole."

Applications for patents are among the curiosities of literature. We are not certain how many patents are granted each month, but the number is very large, and this in the face of the fact that an average of only one in ten applications is allowed. Recently there arrived in Washington a man who had a vest composed of small squares of cloth of more numerous colors than those which appeared in the coat of the ever virtuous and seemly Joseph. The purpose of this vest, for which the wearer asked that a patent might be issued, was to enable dry goods drummers to show their samples without having to carry them in a box or case. The patentability of the contrivance was apparent, and the inventor, a German, was so informed. His eyes sparkled and with a smile of satisfaction on his broad face he slowly unbuttoned his parti-colored westcoat and said bashfully: "See, it is shust the same on der inside!" And so it was. Letters patent were subsequently issued. Whether this style of vest will ever be used by the unostentatious drummer as a means of exhibiting his goods is open to doubt, but it is certain that its inventor has succeeded in having his name enrolled, as a patentee, among the archives of his adopted government.

And now comes another inventor—probably a Pole. Naturally, as his nationality would suggest, he has turned his attention to telegraphic matters. His name is Otto Simsky and he writes from No. 1217 Potts street, Philadelphia, to a gentleman in this city, as follows:

"You know that in all cities mostly in Philadelphia, the boys put on the Telegraph and Telephone wires twine and strings with kites, stones, sticks or rather nuisances, and it is very well-known, that in wet weather and in winter time by ice and frost, these nuisances make a regularly connection from one wire to the other and stop the whole Telegraph or Telephone business. I have constructed a little and handy machine to clean all the wires by fire quickly and with small expense I am sure, this my improvement is a very great benefit for all Telegraph and Telephone Companies. I have a Caveat from August 11th, 1882, for this new fire-clean-pole, and I offer you this for use, if you like to pay me any sum for this permit, or if you want to buy this patent, I will accept any agreeable sum. Enclosed you will find drawing and specification."

Mr. Simsky's caveat may develop into a patent, betimes, but it is scarcely probable he will find people who will buy his "Fire-clean-pole" for "any agreeable sum." Until the Fire Commissioners in this city put an end to the practice the wires for many years were cleared of "kites, stones, sticks and other nuisances" in a much simpler manner than the one outlined by Mr. Simsky. In the course of specification which accompanies his note, Mr. Simsky says, "this little flame make no damage on the wires," which is consoling. He adds: "The men belong to this work," which may be true—it depends, however, we should say, on the men.

We call the attention of telephone managers to the half page advertisement, in another column, of Messrs. Davis & Watts, of Baltimore. These gentlemen were amongst the first to recognize the great future of the telephone, and being agents of the "American Bell" Company for Maryland, as well as authorized manufacturers, they are eminently calculated to know "what is what" in telephone requirements. While on a visit to Baltimore recently, we saw evidence of the growth of their business, and were astonished at the heavy demand on their large resources both for home and foreign trade. We bespeak a trial of their splendid magneto-bells.

Dynamo Machines.

For sale, two dynamo electric machines, made by J. E. Braunsdorf, New York, each 5,000 candle-power. Alfred F. Moore, 200 and 202 North Third street, Philadelphia, Pa.

Valuations in New York.

The following table shows the relative value of the real estate in each ward of the city, and of the personal estate, as assessed for 1881 and 1882:

Wards.	Assessment for 1881.	Assessment for 1882.
First	$54,906,166	$60,512,220
Second	28,398,200	29,236,640
Third	34,042,500	35,265,560
Fourth	12,634,225	11,753,163
Fifth	39,144,600	40,839,800
Sixth	21,828,250	22,363,660
Seventh	15,984,050	16,210,608
Eighth	35,335,542	36,025,160
Ninth	27,090,650	27,423,523
Tenth	17,167,275	17,310,105
Eleventh	15,898,770	16,050,163
Twelfth	85,573,039	97,383,299
Thirteenth	9,787,850	9,853,400
Fourteenth	22,714,937	22,964,155
Fifteenth	51,398,920	52,782,240
Sixteenth	34,174,500	34,793,862
Seventeenth	32,912,800	33,309,423
Eighteenth	70,947,750	71,875,252
Nineteenth	152,303,375	176,556,298
Twentieth	39,270,250	39,701,820
Twenty-first	77,194,250	79,471,130
Twenty-second	74,686,475	79,545,035
Twenty-third	13,836,060	14,299,475
Twenty-fourth	9,504,765	9,577,825
	$976,735,199	$1,035 203,816

We notice the new and commodious quarters of the Rhodes & Smith Electric Company at 95 Fifth avenue. The business of this company has become so large as to necessitate a removal from their old quarters at 37 Barclay street. The demand for their electric gas burner has more than doubled within the past ninety days.

(From New York Star, September 11, 1882.)

There has been distributed through the State Department the gold, silver, and bronze medals awarded to American exhibitors of improvements in electricity. The medal given on the Cumming periphery contact for telegraphs contains on one side a Grecian female head with a laurel wreath, surrounded by the words: "Republique Française," and on the obverse side is a spreading laurel branch with a pendant scroll, inclosing the name "Cumming," surrounded by the words: "Exposition Internationale d'Electricité, Paris, 1881."

A handsome engraved certificate accompanies each medal.

The New Cable to Port Said.

On Friday last Mr. John Pender, M.P., received a telegram from the Eastern Telegraph Company's agent announcing the completion of the new telegraph line to Port Said. The promptitude with which the work has been carried out reflects great credit on all concerned.

Edison's Suit Against the Swan Lamp for Infringement. London.

A patent suit has been commenced in London by the Edison Company against the Swan Company, on the ground that the Swan lamp infringes the Edison. The fundamental principles of incandescent lamps are at issue in the suit. The primary hearing took place before Mr. Justice Chitty, London, July 28th, and the Swan Company was ordered by the Court to keep an account of their manufacture of lamps pending the trial.

NEW PATENTS—ELECTRICAL—1882.

INDEX OF INVENTIONS FOR WHICH LETTERS PATENT OF THE UNITED STATES WERE GRANTED IN THE WEEK ENDING AUGUST 15TH, 1882.

262,645. Automatic Telephone Exchange. M. Daniel Connolly, Philadelphia, Pa, Thomas A. Connolly, Washington. D. C., and Thomas J. McTighe, Pittsburgh, Pa., assignors to Spencer D. Schuyler, New York, N. Y. Filed Aug. 29, 1881. (No model.)

252,647. Automatic Telephone Exchange. M. Daniel Connolly, assignor to Spencer D. Schuyler, New York, N. Y. Filed Nov. 8, 1881. (No model.)

262,701. Circuit for Multiple Switch Boards of Telephone Exchanges. Charles E. Scribner, Chicago, Ill., assignor to the Western Electric Manufacturing Company, same place. Filed Feb. 1, 1882. (No model.)

262,755. Duplex Telegraph. Stephen D. Field, New York, N. Y. Filed April 28, 1881. (No model.)

262,782. Dynamo-Electric Machine. John H. Irwin, Morton, Pa. Filed Feb. 25, 1882. (No model.)

262,646. Electric Switch. M. Daniel Connolly, Philadelphia, Pa., assignor to Spencer D. Schuyler, New York, N. Y. Filed Nov. 29, 1881. (No model.)

262,660. Electrical Circuit for Watchman's Time-Recorders. James F. Gilliland, Indianapolis, Ind. Filed Nov. 5, 1881. (No model.)

262,718. Electric-Arc Lamp. Geo. S. Young, Blackwall, County of Middlesex, and Robert J. Hatton, Stratford, County of Essex, England. Filed May 27, 1882. (No model.) Patented in England Apr. 6, 1882, No. 1,689.

262,640. Grip Apparatus for Cable-Ways. Henry Casebolt, San Francisco, Cal. Filed August 20, 1881. (No model.)

262,590. Magneto-Electric Machine. Charles Heisler, St. Louis, Mo. Filed Nov. 19, 1880. (No model.)

262,700. Microphone. Charles E. Scribner, Chicago, Ill., assignor to the Western Electric Manufacturing Company, same place. Filed Dec. 27, 1881. (No model.)

262,790. Magnetic Separator. John King, Carrizal Bajo, Chili Filed Dec. 27, 1881. (No model.) Patented in England, June 28, 1881, No. 2,825.

262,811. Magneto Telephone. George F. Milliken, Boston, Mass., assignor of two-thirds to James Wentworth Brown, and Henry D. Hyde both of same place. Filed April 24, 1882. (No model.)

262,630. Subterranean System of Electrical Conductors. Theodore N. Vail, Boston, Mass. Filed Nov. 2, 1881. (No model.)

10.183. Transmitter for Telephone. Robert M. Lockwood, and Samual H. Bartlett, New York, N. Y., assignors, by mesne assignments, to the Molecular Telephone Company, same place. Filed April 8, 1882. Original No. 228,826, dated June 15, 1880.

262,784. Telephone-Transmitter. William W. Jacques, Boston, Mass., assignor to the American Bell Telephone Company, same place. Filed Jan. 30, 1882. (No model.)

FOR THE WEEK ENDING AUGUST 22d, '82.

263,149. Commutator for Dynamo or Magneto Electric Machines. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Oct. 4, 1881. (No model.)

263,133. Dynamo or Magneto Electric Machine. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Nov. 11, 1881. (No model.)

263,140. Dynamo-Electric Machine. Thomas A Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 9, 1880. (No model.) Patented in England Sept. 30, 1880, No. 3,964; in Germany Feb. 3, 1881, No. 16,670; in Italy March 29, 1881; In Belgium March 31, 1881, No. 54,152; in Canada March 31, 1881, No. 12,567; in India May 3, 1881, No. 336; in Victoria May 4, 1881, No. 3,005; in France May 27, 1881, No. 141,800; in Spain June 27, 1881; in Queensland June 30, 1881; in New South Wales July 4, 1881; in Austria July 21, 1881; in New Zealand Sept. 15, 1881, No. 551, and in Portugal Nov. 22, 1881.

163,146. Dynamo or Magneto Electric Machine. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Nov. 29, 1881. (No model.)

263,148. Dynamo or Magneto Electric Machine Thomas A Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Nov. 28, 1881. (No model.)

263,132. Electro-Magnetic Railway. Thomas A. Edison, Menlo Park, N. J. Filed August 19, 1880. (No model.) Patented in England Sept. 25, 1880, No. 3,894; in Canada March 31, 1881. No. 12, 568; in India May 3, 1881, No. 341; in Victoria May 12, 1881, No. 3,012; in France May 27, 1881, No. 141,752; in New South Wales June 25, 1881; in Queensland June 30, 1881, and in New Zealand Aug. 2, 1881, No. 542.

263 135. Electric Lamp. Thomas A. Edison, Menlo Park, N. J,, assignor to the Edison Electric Light Company, New York N. Y. Filed Aug, 17, 1880. (No model.) Patented in England Sept. 16, 1880, No. 3,765; in Italy Nov. 6, 1880; in Canada Nov. 11, 1880, No. 11,968; in Belgium Nov. 15, 1880, No. 52,890; in Victoria Dec. 13, 1880, No. 2,936; in Austria Jan. 7, 1881; in Queensland Feb. 7, 1881; in New Zealand March 7, 1881, No 510; in Portugal March 31, 1881, No. 661; in New South Wales April 26, 1881; in Spain April 6, 1881, and in India July 12, 1881, No. 535.

263 137. Electric Chandelier. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 30, 1881. (No model.) Patented in England Sept. 27, 1881 No. 4,174; in Italy Nov. 9, 1881; in France Dec. 5, 1881, No. 145,554; in Canada Dec. 14, 1881, No. 13,835, and in India Jan. 18, 1882, No. 74.

263,138. Electric-Arc Light. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York N. Y. Filed Nov, 28, 1881. (No model)

263,142. Electrical Distribution System Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Oct. 4, 1881. (No model.)

263,131. Magnetic Ore-Separator. Thomas A. Edison, Menlo Park, N. J. Filed June 22, 1881. (No model.)

263,139. Manufacture of Carbons for Electric Lamps. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 6, 1880. (No model.) Patented in England Sept. 16, 1880, No. 3,765; in Italy Nov. 6, 1880; in Canada Nov. 11, 1880, No. 11,968; in Belgium Nov. 15, 1880, No. 52,890: in Victoria Dec. 13, 1880, No. 2,936; in Austria-Hungary Jan. 7, 1881; in Queensland Feb. 7, 1881; in New Zealand March 7, 1881, No. 510; in Portugal March, 31, 1881, No. 661; in New South Wales April 2, 1881; in Spain April 26, 1881, and in India July 22, 1881, No. 535.

263,143. Magneto or Dynamo Electric Machine. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 30, 1881. (No model.)

263,144. Mould for Carbonizing Incandescents. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Nov. 11, 1881. (No model.)

263,150. Magneto or Dynamo Electric Machine. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed June 22, 1881. (No model.)

263,145. Process of Making Incandescents. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed April 26, 1881. (No model.)

263,134. Regulator for Dynamo or Magneto Electric Machines. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y., Filed May 28, 1881. (No model.)

263,136. Regulator for Dynamo or Magneto Electric Machines. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed May 28, 1881. (No model.) Patented in England Oct. 18, 1881, No. 4,552; in Canada, Nov 20, 1881, No. 13,734, and in France Dec. 7, 1881, No. 145,598.

263,141. Straightening Carbons of Electric Incandescent Lamps. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed June 24, 1881. (No model.)

263,147. Vacuum Apparatus. Thomas A. Edison, Menlo Park, N. J., assignor to the Edison Electric Light Company, New York, N. Y. Filed Aug. 30, 1881. (No model.)

263,011. Electric Lamp. Alex. Bernstein, Boston, Mass. Filed March 16, 1882. (No model.)

263,246. Electric-Arc Lamp. William M. Thomas, Cincinnati, Ohio, assignor of one-half to Samuel W. Skinner, same place. Filed June 29, 1882. (No model.)

263,247. Electric-Arc Lamp. William M. Thomas, Cincinnati, Ohio, assignor of one-half to Samuel W. Skinner, same place. Filed April 29, 1882. (No model.)

263,257. Electric Lamp. William L. Voelker, Morton, Pa , assignor to John H. Irwin, Trustee, same place. Filed January 23, 1882. (No model.)

263,281. Electric Signaling Apparatus. Aaron D. Blodgett, George W. Blodgett, and Jacob P. Tirrell, Boston, Mass., assignors to said A. D. Blodgett, G. W. Blodgett, and George O. Carpenter, same place, and James F. Emerson, Wakefield, Mass. Filed May 15, 1882. (No model.)

263,296. Electric Arc Lamp. Joseph Olmsted, Montreal, Quebec, Canada, assignor to the United States Electric Lighting Company, New York, N. Y. Filed April 15, 1882. (No model.)

262,921. Operator's Receiving Telephone. Emile Berliner, Boston, Mass. Filed April 15, 1882. (No model.)

263,124. Secondary Battery. Nicolas De Kabath. Paris, France. Filed January 16, 1882. (No model.) Patented in France August 27, 1881, No. 144,597; in Belgium September 2, 1881, No. 55,632; in England September 19, 1881, No. 4,037; in Italy September 30, 1881, XXVI,409, and in Spain December 20, 1881, No. 2,090.

262,922. Telephone System. Emile Berliner, Boston, Mass. Filed March 29, 1882. (No model.)

262,949. Cut-Out for Telegraph Instruments. Chas. T. Howard, Providence, R. I. Filed April 10, 1882. (No model.)

A printed copy of the specification and drawing of any patent published herein, also of any patent issued since 1865, will be furnished by any of the patent solicitors whose advertisements appear in this journal. In ordering, please state the number and date of the patent desired.

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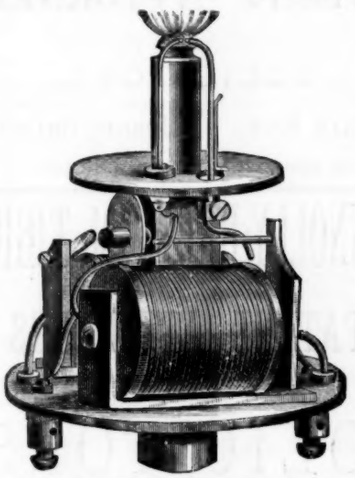

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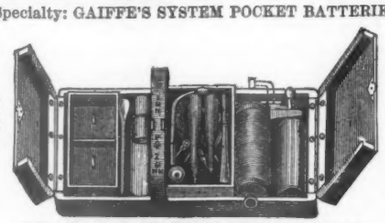

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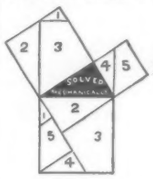

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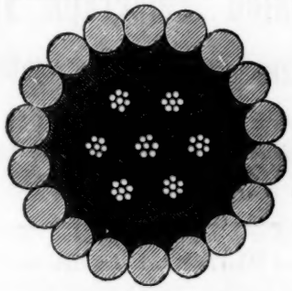

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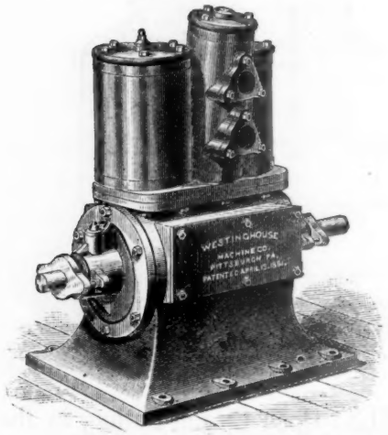

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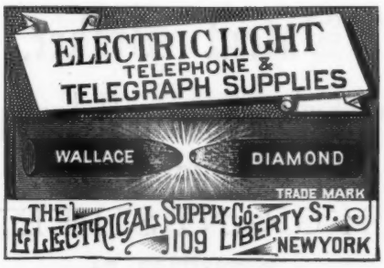

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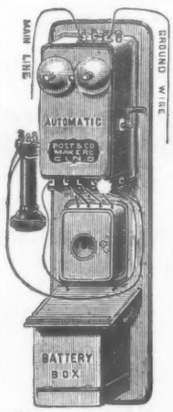
Telegraph & Telephone Department.

POST & COMPANY,

CINCINNATI, OHIO.



LICENSED MANUFACTURERS OF

American Bell Telephone Co.'s MAGNETO AND ELECTRO CALL BELLS, &c.

Manufacturers of all kinds of

Telephone Instruments,

Bells, Plugs, Switch Boards, Annunciator Drops, Spring Jacks, Magneto Engines for Switch Tables, and dealers in all kinds of *Telephone Supplies* and Tools; in stock and for sale at lowest prices.

Galvanized Line Wire, all numbers; Insulated Wire, all numbers; Insulators and Brackets, all sizes; Batteries, all kinds and sizes, at lowest prices.

FULL ASSORTMENT OF

Telegraph Instruments.

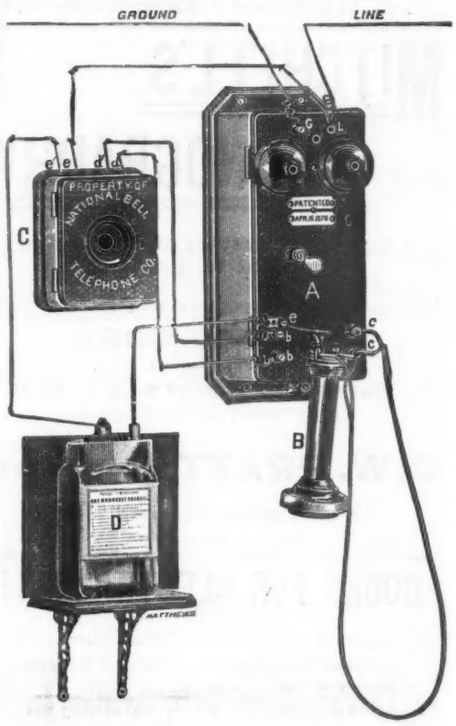
Agents and Managers of Exchanges are requested to correspond with us before purchasing.

☞ We call special attention to our new improved Magneto Call Bells. Samples sent on application to Agents and exchanges.

POST & CO., Cincinnati, O.

The American Bell Telephone Co.

W. H. FORBES, President. W. R. DRIVER, Treasurer.
THEO. N. VAIL, General Manager.



This Company, owning the Original Patents of Alexander Graham Bell for the Electric Speaking Telephone, and other patents covering improvements upon the same, and controlling, except for certain limited territory, under an arrangement with the Western Union Telegraph Company, the Gold and Stock Telegraph Company, the American Speaking Telephone Company, and the Harmonic Telegraph Company, the patents owned by those companies, is now prepared to furnish, upon application, either directly or through any of its licensees, Telephones of different styles, and applicable to a variety of uses.

This company desires to arrange with persons of responsibility for establishing

District or Exchange Systems,

in all unoccupied territory, similar to those now in operation in all the principal cities in this country.

Responsible and energetic persons are required to act as licensees for the purpose of establishing

PRIVATE LINE AND CLUB LINE

systems, for business or social uses. Also to introduce the Telephone for

SPEAKING TUBE

purposes, for which instruments will be leased for a term of years at a nominal rental.

This Company will arrange for Telephone lines between cities and towns where Exchange systems already exist, in order to afford facilities for personal communication between subscribers or customers of such systems.

We respectfully invite attention to this matter, and any further information relating thereto can be obtained from the Company,

No. 95 MILK STREET, BOSTON, MASS.

All persons using Telephones, not licensed by this Company, are hereby respectfully notified that they are liable to prosecution, and for damages for infringement, and will be prosecuted accordingly to the full extent of the law.